

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figure 5. The amendments to Figure 5 are described in detail below. This sheet, which includes Figure 5, replaces the original sheet including Figure 5.

Attachment: Replacement Sheet

REMARKS

The Official Action mailed September 12, 2007, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicant respectfully submits that this response is being timely filed.

The Applicant notes with appreciation the consideration of the Information Disclosure Statements filed on November 2, 2001; November 30, 2001; April 18, 2002; September 20, 2002; May 9, 2003; January 30, 2004; June 16, 2004; March 8, 2005; June 27, 2005; August 11, 2005; October 12, 2005; January 12, 2007; and July 13, 2007.

A further Information Disclosure Statement is submitted herewith and consideration of this Information Disclosure Statement is respectfully requested.

Claims 6, 7, 9, 19, 21, 24-36, 39, 40, 42 and 44-58 are pending in the present application, of which claims 6, 7, 9, 26-31, 39, 40 and 48-53 are independent. Claims 24-36 and 48-58 have been withdrawn from consideration by the Examiner (Box 4a, Paper No. 20070831). Accordingly, claims 6, 7, 9, 19, 21, 39, 40, 42 and 44-47 are currently elected, of which claims 6, 7, 9, 39, 40 and 42 are independent. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Initially, the Applicant notes that Figure 5 has been amended to correct minor informalities and so that it is consistent with the description in the specification, for example, at page 22, lines 23-24, which discloses that "FIG. 5 shows the layout of the actual electrodes and the like corresponding to the circuit configuration of FIG. 3." Figure 3 shows signal lines Y1 (210) to Y4 (213) and scanning lines X1 (214) to X4 (217), where the gate electrodes are connected to the scanning lines X1 to X4. As such, Figure 5 has been amended to consistently show that gate electrodes are connected to the scanning lines X1 and X2 (that is, X1 and X2 and Y1 and Y2 were inadvertently reversed in the original version of Figure 5). Also, at this opportunity, the

Applicant has added reference number 67 to Figure 5, which denotes a contact hole and which is based on Figure 6E.

Paragraph 2 of the Official Action rejects claims 6, 7, 9, 19, 21, 39, 40, 42 and 44-47 as obvious based on the combination of U.S. Patent No. 5,051,570 to Tsujikawa; U.S. Patent No. 4,007,294 to Woods; U.S. Patent No. 4,924,279 to Shimbo; and U.S. Patent No. 4,778,258 to Parks. The Applicant respectfully traverses the rejection because the Official Action has not made a *prima facie* case of obviousness.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some reason to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In the wake of the recent Supreme Court decision of KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727 (2007), the PTO's Deputy Commissioner for Patent Operations issued on May 3, 2007, a memorandum to all Technology Center Directors ("May 3, 2007 Memo") noting that "a showing of 'teaching, suggestion, or motivation' to combine the prior art to meet the claimed invention could provide a helpful insight in determining whether claimed subject matter is obvious under 35 U.S.C. § 103(a)." However,

whatever test for obviousness may be employed, "the analysis supporting a rejection under 35 U.S.C. § 103(a) should be made explicit, and it [is] 'important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements' in the manner claimed." (May 3, 2007 Memo; emphasis added). Thus, the law still requires a reason for combining references (e.g., a benefit), and that reason must have "rational underpinning to support the legal conclusion of obviousness." In re Kahn, 441 F.3d 977, 988 (Fed.Cir. 2006) (cited with approval in KSR, 127 S.Ct. 1727). Against this legal backdrop, the Applicant respectfully submits that the Examiner has fallen well short of their burden in making the pending obviousness rejections based on the combination of Tsujikawa, Woods, Shimbo and Parks.

There is no proper or sufficient reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Tsujikawa, Woods, Shimbo and Parks or to combine reference teachings to achieve the claimed invention. MPEP § 2142 states that the examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. It is respectfully submitted that the Official Action has failed to carry this burden. While the Official Action relies on various teachings of the cited prior art to disclose aspects of the claimed invention and asserts that these aspects could be modified in the manner asserted in the Official Action, it is submitted that the Official Action does not adequately set forth why one of skill in the art would combine the references to achieve the features of the present invention.

The test for obviousness is not whether the references "could have been" combined or modified as asserted in the Official Action, but rather whether the references should have been. As noted in MPEP § 2143.01, "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (emphasis in original). Thus, it

is respectfully submitted that the standard set forth in the Official Action is improper to support a finding of *prima facie* obviousness.

Initially, the Applicant notes that the present Official Action newly cites Shimbo in support of the rejection. However, it does not appear that the Official Action has addressed the Applicant's arguments raised, for example, at pages 3-4 of the *Response* filed January 12, 2007, incorporated herein by reference. Also, it does not appear that the newly cited reference, Shimbo, cures the deficiencies in the alleged reasons for combining Tsujikawa, Woods and Parks, as stated in the above-referenced *Response*. In addition to these previous arguments, the Applicant further submits the following arguments in traversal of the assertion of obviousness based on the alleged combination of Tsujikawa, Woods, Shimbo and Parks.

Independent claims 6, 7, 9, 39, 40 and 42 recite a display device comprising a gate insulating film that covers a semiconductor film, contains fluorine, and is in contact with a top surface and side surfaces of the semiconductor film, and a leveling film comprising an organic resin. The Official Action has not demonstrated why it would have been obvious to combine the prior art references to achieve at least these features.

The Official Action asserts that Tsujikawa discloses "a leveling film (123) comprising an organic resin formed over the at least one thin film transistor (103, 104), because the interlayer insulating film (123) formed of polyimide (organic resin) and functions as flatten the surface as shown in the Fig. 9;" (page 3, Paper No. 20070831; emphasis in original) and "that the gate insulating film is formed of silicon oxide (see col. 8, lines 16-18, that is the same as shown in the Fig. 9 of the gate insulating film 134, 135)" (page 4, *Id.*). Further, the Official Action asserts the following: "Woods teaches (abstract) that a method of treating a layer of silicon dioxide in which a fluoride compound is applied to one surface of the silicon dioxide layer to prevent the deleterious effect resulting from any mobile impurity ions therein, so that would obtain more protection. Therefore, it would have been obvious to those skilled in the art ... to

modify the electro-optical display device of Tsujikawa with the teachings of the gate insulating film having fluorine as taught by Woods, since the skilled in the art would be motivated for preventing the deleterious effect resulting from any mobile impurity ions therein (abstract)" (Id., emphasis removed). The Applicant respectfully disagrees and traverses the assertions in the Official Action.

Woods appears to disclose "a method of stabilizing the gate dielectric of an MOS (metal-oxide-semiconductor) device" (column 1, lines 9-10). Specifically, Woods discloses an MOS capacitor comprising a substrate of silicon, a silicon dioxide layer and an aluminum electrode (column 2, line 50 to column 3, line 20). However, the Applicant respectfully submits that Woods does not teach or suggest a transistor such as an MOS transistor and a thin film transistor in which a gate insulating film contains fluorine. Thus, it is not clear why one of ordinary skill in the art at the time of the present invention would have had a reason to combine the gate dielectric of the MOS capacitor in Woods with the gate insulating film 134, 135 of the thin film transistor 103, 104 in Tsujikawa.

Further, the Official Action asserts the following: "Shimbo teaches (col. 2, lines 32-38; Figs. 2-4) that the gate insulating film (6) covering the semiconductor film (5) and in contact with a top surface and side surface of the semiconductor film (5), and such TFT can be easily obtained" (page 5, Paper No. 20070831). Also, without any specific references to the prior art in support and without statements which establish the level of ordinary skill in the art at the time of the present invention, the Official Action asserts the following: "Therefore, it would have been obvious to those skilled in the art ... to modify the electro-optical display device of Tsujikawa and Woods with the teachings of the gate insulating film covering the semiconductor film as taught by Shimbo, since the skilled in the art would be motivated for easily obtaining a TFT" (Id.). The Applicant strongly disagrees and traverses the assertions in the Official Action.

Even if it the Official Action were to demonstrate that it is obvious to one of ordinary skill in the art at the time of the present invention to combine Tsujikawa with

Woods, the Applicant respectfully submits that it would not have been obvious to combine the gate insulating film 6 of Shimbo with the gate insulating film of Tsujikawa and Woods. The gate insulating film of Tsujikawa and Woods does not need to cover a semiconductor film, and there is no reason to combine the gate insulating film of Tsujikawa and Woods with the gate insulating film 6 of Shimbo. Specifically, there are at least three reasons why such combination would not have been obvious, which are set forth in detail as follows:

First, Tsujikawa merely discloses that for an interlayer insulating film 123 consisting of silicon nitride, "organic insulating materials such as polyimide may also be used in addition to what was mentioned in the above" (column 11, lines 11 and 31-33). That is, Tsujikawa does not appear to teach or suggest the effect of impurity ions on the organic resin film. Since the gate insulating film 134, 135 of the thin film transistor 103, 104 in Figure 9B of Tsujikawa does not cover the semiconductor film 114, 115, Tsujikawa does not recognize an effect on the characteristics of a transistor when using an organic resin film for an electronic device in which plural impurity ions, such as Fe, Na, K and Cu, are potentially included.

Second, Woods discloses that "the novel method increases the flexibility of processing semiconductor devices, and provides protection against impurities that may be introduced into the silicon dioxide layer after its growth" (column 1, lines 41-45). However, Woods also does not recognize an effect on the characteristics of a transistor when using an organic resin film for an electronic device in which plural impurity ions are potentially included.

Third, Shimbo does not even teach or suggest an organic resin film formed over a TFT.

Thus, Tsujikawa, Woods and Shimbo, either alone or in combination, do not recognize an effect on the characteristics of a transistor when using an organic resin film for an electronic device in which plural impurity ions are potentially included. As such, Tsujikawa, Woods and Shimbo, either alone or in combination, do not teach or

suggest why it would have been obvious to have a display device comprising a gate insulating film that covers a semiconductor film, contains fluorine, and is in contact with a top surface and side surfaces of the semiconductor film, and a leveling film comprising an organic resin.

Parks does not cure the deficiencies in Tsujikawa, Woods and Shimbo. Parks is relied upon to allegedly teach a transparent pixel electrode. However, Tsujikawa, Woods, Shimbo and Parks, either alone or in combination, do not teach or suggest why it would have been obvious to have a display device comprising a gate insulating film that covers a semiconductor film, contains fluorine, and is in contact with a top surface and side surfaces of the semiconductor film, and a leveling film comprising an organic resin.

Therefore, the Applicant respectfully submits that the Official Action has not provided a proper or sufficient reason, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Tsujikawa, Woods, Shimbo and Parks or to combine reference teachings to achieve the claimed invention.

In the present application, it is respectfully submitted that the prior art of record, either alone or in combination, does not expressly or impliedly suggest the claimed invention and the Official Action has not presented a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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